

Claims:

1. A process for the production of a polyurethane product by reaction of a mixture of
 - 5 (a) at least one organic polyisocyanate with
 - (b) at least one polyol
 - in the presence of
 - (c) a catalyst composition comprising a blend of
 - 10 (c1) at least one tertiary amine molecule containing an isocyanate reactive group and
 - (c2) at least one compound containing at least one quaternary ammonium alkoxide moiety and at least one tertiary amine group, wherein (c2) is partially or totally neutralized with at least one acidic compound
 - 15 (c3);
 - (d) optionally in the presence of a blowing agent; and
 - (e) optionally additives or auxiliary agents known per se for the production of polyurethane foams, elastomers and/or coatings.

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2. The process of Claim 1 wherein the catalyst is the reaction product of an amine with an epoxide.

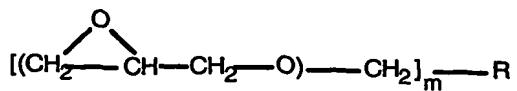
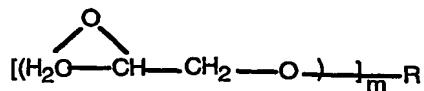
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3. The process of Claim 2 wherein the epoxide is an aliphatic or cycloaliphatic polyepoxide or glycidyl ether.

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4. The process of Claim 3 wherein the polyepoxide is a diepoxide or triepoxide.

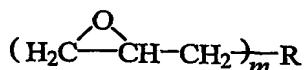
5. The process of Claim 2 wherein the epoxide is represented by one of the formulae



or

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wherein R is substituted or unsubstituted aromatic, aliphatic, cycloaliphatic or heterocyclic polyvalent group and n had an average value of from 1 to less than 8 and m is an integer from 1
15 up to the valence of R.

6. The process of Claim 1 wherein the acid is selected from one or more of organic or inorganic acids, esters or polyesters, organic halogen based compounds with a labile halogen atom, aromatic mono-halide compounds containing at least one electron-withdrawing nitro group ortho or para to the halogen, or epoxy resins with high levels of halogen.

7. The process of Claim 6 wherein the acid is added in less than a stoichiometric amount to neutralize the quaternary amine in (c2).

8. The process of Claim 2 wherein the amine is represented by the formula $\text{HN}(\text{R}^1)_2$, where each R^1 is independently a compound having 1 to 20 carbon atoms or may be attached together with the nitrogen atom and optionally other hetero atoms and alkyl-

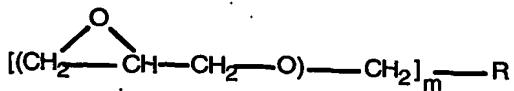
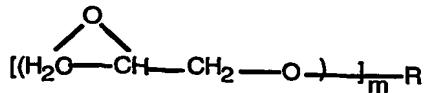
substituted hetero atoms to form a saturated or unsaturated heterocyclic ring.

9. The process of Claim 2 wherein the amine is
5 represented by the formula $(R^3)_x-A-(R^2-M)_z-(R^2)_y$ or $(R^3)_x-A-[(R^2-M)-$
 $(R^2)_y]_z$,
where A is either hydrogen, nitrogen or oxygen;
x is 0, 1 or 2;
z is 1 or 2
10 with the provisos x is zero when A is hydrogen, x and z are 1 when
A is oxygen, and when A is nitrogen x and z can be 1 or 2 with the
sum of x and z being 3;
 R^2 at each occurrence is independently a moiety having 1 to 20
carbon atoms;
15 R^3 is hydrogen or a moiety having 1 to 20 carbon atoms;
M is an amine or polyamine, linear, branched or cyclic, with at
least one tertiary amine group; and
y is an integer from 0 to 6.

20 10. The process of Claim 2 wherein the amine is
represented by the formula $(H)_d-Y-(R^2-M-(R^2)_y)_b$, where
Y is oxygen or nitrogen;
 R^2 at each occurrence is independently a moiety having 1 to 20
carbon atoms;
25 M is an amine or polyamine, linear, branched or cyclic, with at
least one tertiary amine group;
y is an integer from 0 to 6; and
b and d are 1 when Y is oxygen and when Y is nitrogen, b and d are
either 1 or 2 such that the sum of b and d is 3.
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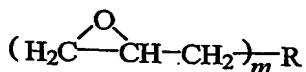
11. A polyurethane product produced by the process of
anyone of Claims 1 to 10.

12. A polyurethane catalyst comprising the reaction
35 product of amine with an epoxide wherein the epoxide is selected
from one or more compounds of the formulae



or

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wherein R is substituted or unsubstituted aromatic, aliphatic, cycloaliphatic or heterocyclic polyvalent group and n had an average value of from 1 to less than 8 and m is an integer from 1
10 up to the valence of R;

and the amine is selected from one or more compounds of the formulae

$\text{HN(R}^1\text{)}_2$ wherein each R^1 is independently a compound having 1 to 20 carbon atoms or may be attached together with the nitrogen atom and
15 optionally other hetero atoms and alkyl-substituted hetero atoms to form a saturated or unsaturated heterocyclic ring,

$(\text{R}^3)_{\text{x}}\text{-A-}(\text{R}^2\text{-M})_{\text{z}}-(\text{R}^2)_{\text{y}}$ or $(\text{R}^3)_{\text{x}}\text{-A-}[(\text{R}^2\text{-M})-(\text{R}^2)_{\text{y}}]_{\text{z}}$ where A is either hydrogen, nitrogen or oxygen;

x is 0, 1 or 2;

20 z is 1 or 2

with the provisos x is zero when A is hydrogen, x and z are 1 when A is oxygen, and when A is nitrogen x and z can be 1 or 2 with the sum of x and z being 3;

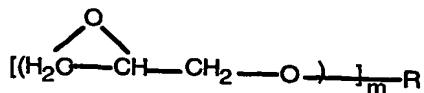
R² at each occurrence is independently a moiety having 1 to 20 carbon atoms;

25 R³ is hydrogen or a moiety having 1 to 20 carbon atoms; M is an amine or polyamine, linear, branched or cyclic, with at least one tertiary amine group; and

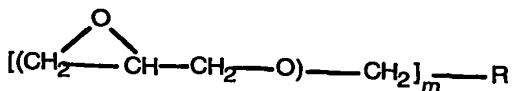
y is an integer from 0 to 6.

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13. A polyurethane catalyst comprising the reaction product of amine with an epoxide wherein the epoxide is selected from one or more compounds of the formulae

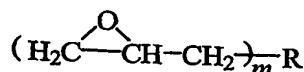


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or

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wherein R is substituted or unsubstituted aromatic, aliphatic, cycloaliphatic or heterocyclic polyvalent group and n had an average value of from 1 to less than 8 and m is an integer from 1 up to the valence of R;

and the amine is selected from one or more compounds of the formulae

$(\text{H})_d-\text{Y}-\text{(R}^2\text{-M-}(\text{R}^2)\text{)}_y\text{, where}$

M is an amine or polyamine, linear, branched or cyclic, with at least one tertiary amine group;

R^2 at each occurrence is independently a moiety having 1 to 20 carbon atoms;

y is an integer from 0 to 6;

Y is oxygen or nitrogen; and

b and d are 1 when Y is oxygen and when Y is nitrogen, b and d are either 1 or 2 such that the sum of b and d is 3.